



VISTA

Vertical/horizontal Integration of Space Technologies and Applications



Summary

- Automated space products to the warfighter
- Multi-agent interoperability and communications in a network-centric environment
- Advanced knowledge management capabilities
- Increased timeliness and relevance of space products to the Warfighter
- Reduced bandwidth utilization for space products

The Vertical/horizontal Integration of Space Technologies and Applications (VISTA) program intends to normalize space products and services within the U.S. Army's battle command environment.

Space products and services, while considered indispensable by the warfighter, are not automatically integrated with the U.S. Army battle command functions. Space-resourced products are normally developed by strategically oriented production facilities and provided to analysis centers and higher headquarter elements. After the space-developed data and/or information is analyzed, it is normally distributed using formatted messages over standard communications systems such as broadcast services. The capability to directly provide the tactically needed data and/or information that is tailored to the individual warfighter's need is currently limited. VISTA intends to provide this tailored space knowledge to all U.S. Army warfighters (corps to foxhole) in a seamless and timely manner.

Overview

The purpose of VISTA is to vertically and horizontally integrate space-based and near space-based capabilities and products with future force warfighting elements in a "space to foxhole" LandWarNet environment.

Benefits to Tomorrow's Defense

VISTA provides the capability to distribute integrated space products and services in a seamless network capability, supporting all levels of Army Battle Command from Corps and theater needs to the specific needs of individual tactical commanders at brigade and below. This will require integration of the space domains at the application level of the LandWarNet. VISTA will support an individual commander's specific Courses of Action (COA) and identified Commander's Critical Information Requirements (CCIR).

The VISTA capability will integrate products and services from ten space mission domains across the LandWarNet environment. These space domains are:

- Ground Missile Defense & Missile Warning
- Space Situation Awareness
- Offense & Defense Counter Space (O/DCS) or Space Control
- Military Satellite Communication (MILSATCOM)
- Plans & Course of Actions
- Data Integration
- Intelligence, Surveillance, Reconnaissance (ISR)
- Weather, Terrain and Environment Monitoring (WTEM)
- Joint Blue Force Tracking (JBFT)
- Information Operations (IO)

Technical Concept

VISTA will achieve space integration by applying advanced networking technology, Intelligent Agent (IA) technology, knowledge-centric management techniques, and adaptive applications to vertically and horizontally integrate space products and services within the LandWarNet environment. VISTA applications and Intelligent Agents (IAs) are defined as "software entities" in the network-centric environment and are capable of flexible autonomous action in a non-hierarchical manner to meet individual warfighter needs. The VISTA software will be designed to support four components: (1) the required collaborative planning to ensure warfighter needs are identified; (2) the production and distribution of the appropriate space products and services; (3) the

integration of space-developed data and information in warfighter tactical applications; and (4) the control of the VISTA IAs while they operate within the LandWarNet net-centric environment.

The VISTA IA software will perform the following functions:

- **Collect:** Gather data and information from space resources and correctly distribute them in the network-centric environment. Includes data mining.
- **Decide:** Apply knowledge, experience and instructions to data and information. Decide *what* state of affairs we want achieved and *how* we want to achieve them.
- **Produce:** Autonomously organize decisions, data, information, knowledge and experience into reports for the user and other selected network-centric agencies.
- **Format:** Reformat space and strategic data and information into formats that can be directly read and understood by battle command applications.
- **Present:** Organize space products and services and graphically present them to applicable battle command applications.
- **Share:** Mediate, arbitrate, de-conflict and share data, information, knowledge, experience and reports with other applications and battle command elements operating in the network-centric environment.

The VISTA effort will:

- Demonstrate automated capability to integrate space products with the battle command capabilities of tactical maneuver elements using Intelligent Agent and knowledge management technologies;
- Integrate space domain products and services with tactical battle command systems;
- Demonstrate reduced bandwidth utilization;
- Increase timeliness and utility of space products and services;
- Enhance planning and support capabilities of Space Support Elements (SSE), staff Space Operations Officers (SOO)/FA-40s; and
- Increase the relevance of information exchanged by using agents that tailor and provide the only information/data needed.



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